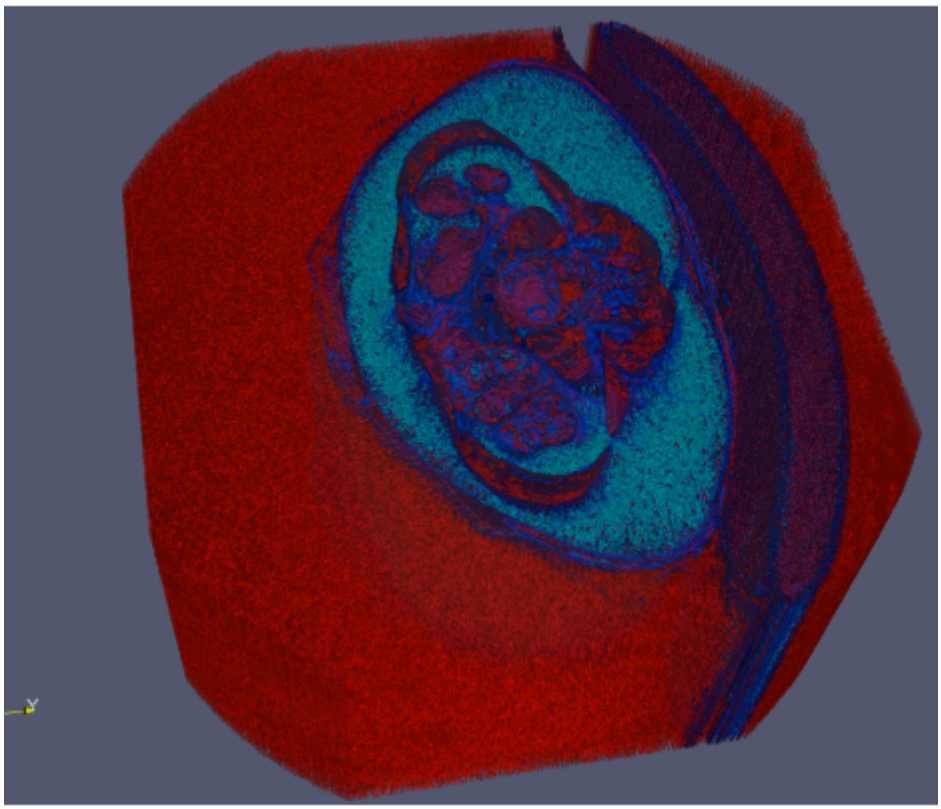
Author: Edward Taylor, 976335

What can we learn from the visualization?

The aim of this visualisation is to show the complex structure of the pancreas and the internal organs and body tissue that surrounding it which makes it a complex part of the body.

What is the name for the type of visualization(s) used?

The visualisation type used is an iso surface making use of multiple contour functions.



What are all visual mappings used?

Multiple visual mappings were used to map different body parts do different colours. For example tissue was mapped to one colour (light blue) and the internal organs mapped to another and bone mapped to another.

Iso Surface mappings... -29000-> tissue, -10000-> perimeter of body, 10000 -> outside of body

.

The jet transfer function was used to show color

Was there any special data preparation done?

Data preparation required the data set being enlarged from its original scaling as it was far too small to work with.

What are the limitations of your design?

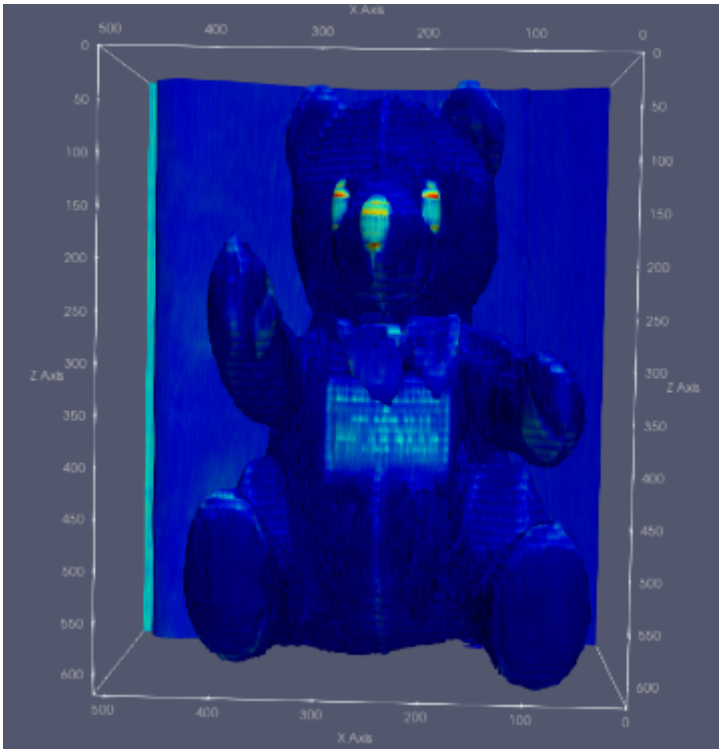
The limitations of this visualisation is how cluttered and grainy the image can appear, this is due to lots of noise in the data which causes the grain so a clearer dataset would be ideal.

What can we learn from the visualization?

This aim of this visualisation shows the object is a teddy bear. This is achieved by showing the areas of highest density change as an iso surface, these areas are the teddy's eyes and nose as they are likely made out of a tougher material e.g. plastic. The visualisation also shows the teddy bear has a slightly denser chest area that appears to be in a rectangle, this is likely some sort of label, message etc.

What is the name for the type of visualization(s) used?

The threshold visualisation function was used in this mapping with the minimum value set to 44 and the max set to 1462.



What are all visual mappings used?

For visual mappings I decided to use an isosurface, I then created a subset of the data and use this going forward in my visualisations, I selected the following data points for each axis, X: 20 -> 440, Y: 80 -> 430, Z: Unchanged. This helped to cut out some of the additional noise from the dataset so I could focus purely on the object in question. This had the added benefit of reducing processing time as a lot of the denser data points are behind the teddy.

.

I used the 'jet' transfer function to show the gradient changes and color

Was there any special data preparation done?

For data preparation I also used the transform function to increase the size of the Z axis by 10 times. This helped to make the teddy seem normally proportioned and not squashed.

What are the limitations of your design?

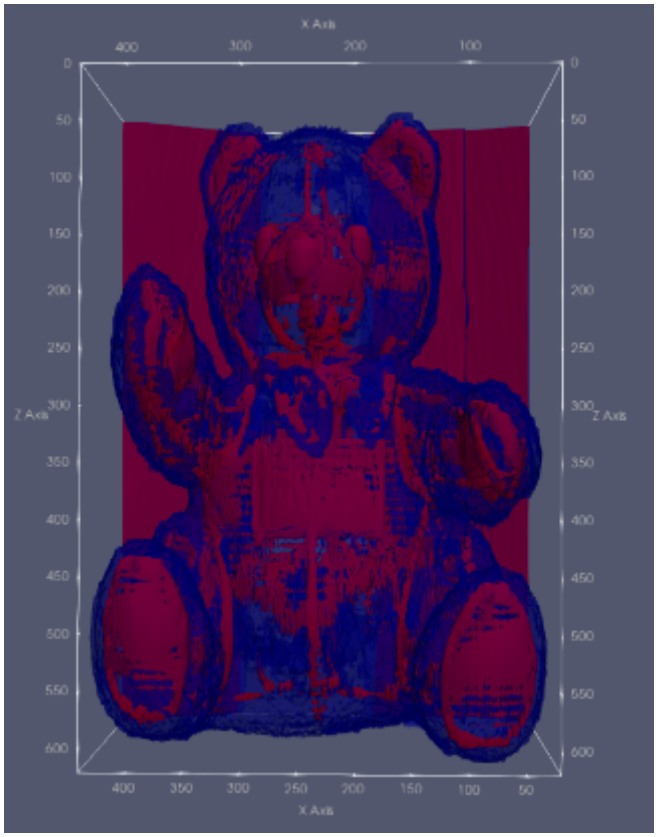
The visualisation only shows one iso surface as is a single threshold value so provides no insight as to what is inside the object.

What can we learn from the visualization?

This aim of this visulisation is to show the denser objects that are inside the teddy, past the low density outside.

What is the name for the type of visualization(s) used?

The visual design shows how the teddy has been constructed as the denser points appear to be things such as stitching and tougher/denser structural materials for keeping the teddy in shape.



What are all visual mappings used?

The visual mapping uses two isosurface contour functions which were used to create two iso surfaced which were layered over each other so both could be seen. The outside layer shows outside the structure of the teddy bear and its fur this was achieved by setting the iso surface value to 44. The second contour function had a higher iso-value which was set to 170. To be able to see the inside layer I lowered the opacity on the outside iso surface to 0.4, this helped to clearly represent the second iso surface was inside the first and had a similar general structure.

.

The ject transfer function was used to show the iso surface's color

Was there any special data preparation done?

For data preparation I once again decided to create a subset of the data and use this going forward in my visualisations, I selected the following data points for each axis, X: 20 -> 440, Y: 80 -> 430, Z: Unchanged. This helped to cut out some of the additional noise from the dataset so I could focus purely on the object in question. This had the added benefit of reducing processing time as a lot of the denser data points are behind the teddy.

.

I also used the transform function again to increase the size of the Z axis by 10 times. This helped to make the teddy seem normally proportioned and not squashed.

What are the limitations of your design?

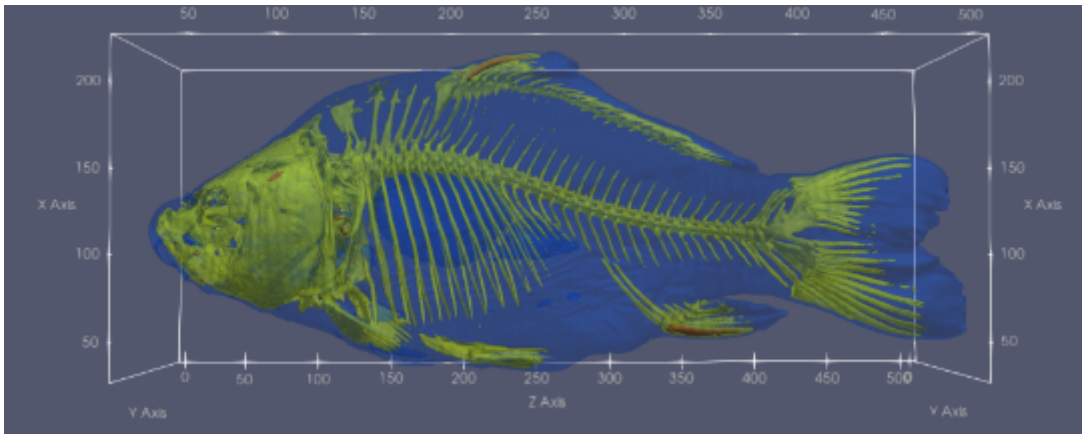
It would be helpful to remove some of the additional noise from the dataset, this would help to create smoother surfaces on the denser objects and make its structure even more clear.

What can we learn from the visualization?

This aim of this visualisation is to show the internals of the fish, and what makes up its body structure. This helps the user understand where different key body parts are such as bones are cartilage and even the organs.

What is the name for the type of visualization(s) used?

Multiple isosurfaces were created using the contour function to show multiple layers of the fishes internals



What are all visual mappings used?

The visual mapping is a contour functions to show three different densities and then layered their iso-surfaces to create an image detailing the insides of the fish. These three iso surfaces mapped to following:
400 -> Skin, 2000 -> Cartilage, 1250 -> Bone.
.
The jet transfer function was used to show each iso surface color

Was there any special data preparation done?

For data preparation I also lowered the opacity on the data and each iso surface and set each to a distinct colour so all three could be clearly seen at the same. I also added data metrics to show how the size of each axis which helped to visulise the size of the object and the changes that took place.

What are the limitations of your design?

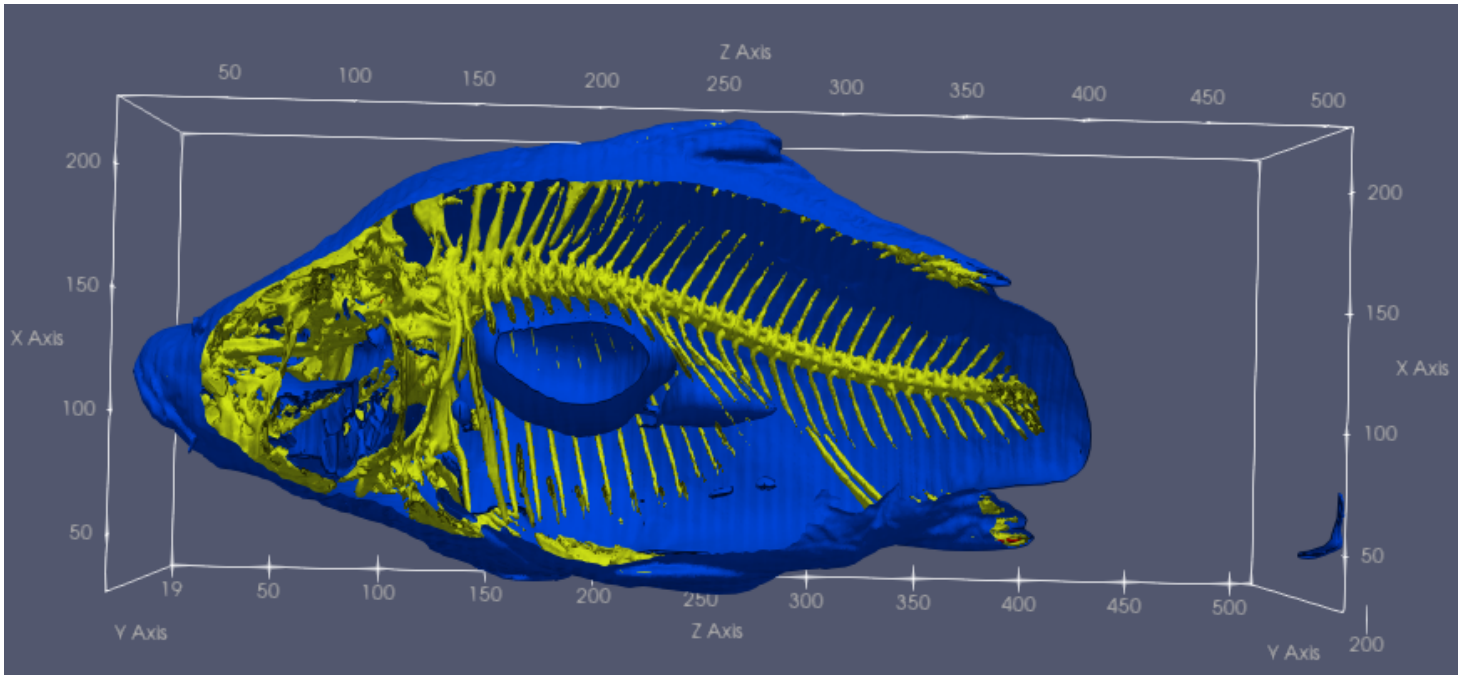
This visualisation could be improved by making the inside organs (that are the same density as skin) to stand out more clearly as they are sometimes difficult to clearly distinguish.

What can we learn from the visualization?

The aim of this visualisation is to show the size of the internal organs of the fish. This is achieved by slicing through the fish and its organs to show the inside of the organs.

What is the name for the type of visualization(s) used?

Slice mapping feature edges show the inside of the fish's organs.



What are all visual mappings used?

The visual mapping is achieved through using the slice and feature edge's function which helped to show the edges of the organs and therefore offer insight into their size and composition.

.

Iso surfave values are set to 400 -> Skin, 2000 -> Cartilage, 1250 -> Bone.

.

The slice occurs at y=168.

.

The jet transfer function was used to show the iso surface colors

Was there any special data preparation done?

For data preparation I sliced the dataset in two along the Y axis. I also lowered the opacity on the data and each iso surface and set each to a distinct colour so all three could be clearly seen at the same.

What are the limitations of your design?

The visualisation could be improved by showing the individual organs more clearly, it can be confusing which organ is which when a single slice is used.